



# Embedded Technosolutions

Venture of IIT Bombay & VJTI Alumni

Embedded Systems | Software | Mechanical | Automation

Trainings & Jobs

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**Embedded Systems with PLC Automations**

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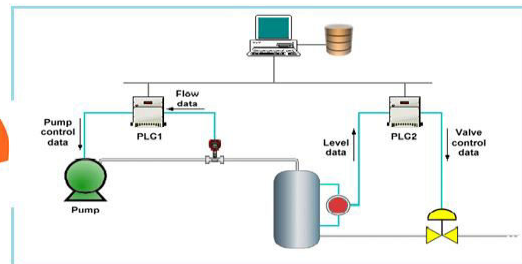
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Any Industry Always Refer a Candidate with Multiple Skills,  
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**Embedded Technosolutions** is a Professional Training Institute & a Company which Working for Indian MNCs & Medium/Small Scale Industries in Product R&D, Development, Manufacturing & Customization.

Our training sessions are purely practical based on industrial standards.



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## Till Now We Worked for the following Industries

- Crompton Greaves Ltd, Mumbai
- Laboratory Corporation of America, LabCorp, Burlington, NC USA
- Netfinity, India
- Continental Grain Corporation
- Brook Furniture Rental, Chicago, IL
- ITA, Bangalore
- RAK Ceramics, Mumbai
- Nvidia, Pune
- ARORA, Mumbai
- RED Cell, Mumbai
- Secutech, Mumbai



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## Embedded C Programming

### Chapter 1 : Introduction to C

- 1.1 Special features of c
- 1.2 C compilation process with GCC under Linux
- 1.3 C identifiers, variables, keywords and constants
- 1.4 C data types

### Chapter 2: Instructions

- 2.1 Operators
- 2.2 Decision control instructions



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2.3 Loop control instructions

## Chapter 3: Functions

3.1 Library functions

3.2 User defined functions

3.3 Function declaration and definition

3.4 Passing arguments by value and by address

3.5 Storage classes

3.6 Preprocessors

## Chapter 4: Arrays and strings

4.1 Array declaration and initialization

4.2 Passing arrays to functions

4.3 Initialization of strings

4.4 String library functions

## Chapter 5: Pointers

5.1 Pointer basics



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5.2 Passing arguments by address

5.3 NULL pointers

## ARM 7 (LPC2148) Processor

### Chapter 1: Introduction to ARM Processor

- 1.1 Introduction to embedded system and ARM Processor
- 1.2 ARM processor family
- 1.3 Application of ARM Processor
- 1.4 Compiler
- 1.5 Difference between RISC & CISC

### Chapter 2 : LPC2148 Microcontroller Pin details, Memory

- 2.1 LPC2148 ARM7 microcontroller
- 2.2 Features of LPC2148
- 2.3 Block diagram of LPC2148
- 2.4 Pin diagram of LPC2148
- 2.5 Architectural overview
- 2.6 On-chip flash program memory
- 2.7 On-chip static RAM



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## Chapter 3 : Keil IDE

- 3.1 Introduction to Keil IDE
- 3.2 Creating project with Keil
- 3.3 Debugging

## Chapter 4 : Hardware Interface

- 4.1 Minimum system requirements for LPC2148
- 4.2 Hardware interfacing details

## Chapter 5 : System Control

- 5.1 PLL
- 5.2 External Interrupt input
- 5.3 Power Control ,VPB

## Chapter 6 : Pin Connect block ,GPIO

- 6.1 Pin Connect Block
- 6.2 General Purpose I/O:
  - LED and switches interfacing
  - Buzzer





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LCD

DC Motor

Matrix keypad interfacing

## Chapter 7 : Timer , ADC , UART

7.1 Timer

7.2 10-bit ADC

7.3 UART : Features, Serial Communication

## Chapter 8 : I2C , SPI ,PWM

8.1 2C-busserialI/OController:Features&InterfacingwithAT24C04

8.2 SPI-Serial I/O Controller : Features & Interfacing with SD Memory Card

8.3 PWM



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## Raspberry Pi with Embedded Linux

### Chapter 1

- 1.1 Program Raspberry Pi : a credit-card sized computer
- 1.2 Python programming for Raspberry Pi
- 1.3 Interacting and configuring the RPi OS
- 1.4 ARM 11 architecture
- 1.5 Porting of Linux Kernel and booting RPi

### Chapter 2

Linux programming basics

### Chapter 3

- 3.1 Programming the GPIO and interfacing peripherals With Raspberry Pi
- 3.2 Generating PWM signals through the Pi

### Chapter 4

- 4.1 Programming and work with UART protocol
- 4.2 Remote Login methods: HyperTerminal, Ethernet



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## Chapter 5

Work with I2C protocol

## Chapter 6

Developing GUI with TKinter

## Wireless Communication

### Chapter 1

- 1.1 Introduction of DTMF mobile technology
- 1.2 DTMF technology interfacing in real application
- 1.3 DTMF programming
- 1.4 Practical project design based on DTMF technology

### Chapter 2

- 2.1 Introduction of RF Communication
- 2.2 RF technology interfacing in real application
- 2.3 RF module programming
- 2.4 Practical project design based on RF technology



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## Chapter 3

- 3.1 Introduction to RFID communication
- 3.2 RFID technology interfacing in real application
- 3.3 RFID module programming
- 3.4 Practical project design based on RFID technology

## Chapter 4

- 4.1 Introduction to GSM communication
- 4.2 GSM technology interfacing in real application
- 4.3 GSM module programming
- 4.4 Practical project design based on GSM technology

## Chapter 5

- 5.1 Introduction to Bluetooth communication
- 5.2 Bluetooth technology interfacing in real application
- 5.3 Bluetooth module programming
- 5.4 Practical project design based on Bluetooth technology



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## Theory of PLC

- Introduction to PLC
- Types of PLC
- PLC VS Microcontroller
- PLC Advantages & PLC Applications
- Introduction to PLC Hardware
- How to select the PLC for Projects
- Introduction to I/O Devices (Digital only)
- Introduction to Logic Gates
- Introduction to Ladder programming, Ladder Symbols, function Blocks.
  - Syntax & its error
  - Scanning of I/O in ladder
- Benefits of ladder programming
  - Designing Single Rung & network
  - Designing Multiple & branching Rungs & networks
  - Learning algorithms for Practical applications.



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- Introduction to PLC Trainer 100A
  - What is Automation Control & Project management
  - Writing of Alarms in PLC And Interface,Ack in HMI/SCADA
  - Analog Input/Output Programming
    - Analog Input Reading,Averaging,Scaling etc
    - Analog Output writing,Scaling for field Devices
    - Programming for 4-20mA,0-10v Analog Input Signals
  - High Speed Counter
    - Use of high speed counter in Ladder Programming,
      - Application of High speed Counter



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## Theory of VFD

To study Functions of VFD Switches & Symbols.

- To operate motor using VFD Console switches.
- To change parameter settings.
- Selection of VFD for Application.
- To change Ramp Down time [deceleration time].
- To change Ramp up time [acceleration time].
- To set output frequency limit [Maximum].
- To set output frequency limit [Minimum].
- Introduction of Modbus Communication of VFD with PLC .
- Troubleshooting of VFD.



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## Practicals on PLC & VFD

- Wiring of Input devices Push buttons Limit switch to the PLC.
- Wiring of output devices from PLC to Relay Contactor and Solenoid Valves.
- Wiring of Level Sensors Pressure sensor to the PLC
- Wiring of Analog output from PLC to different devices.
- Programming Of Analog Input and Output in PLC
- Configuration of PLC - CPU Hardware with the Software
- PLC Ethernet / Profibus / RS 232 Comport Configuration with work station.
- Creating new Project for Conveyor Control/ Fan Control/ Pump Control with different industry based Application.
- Creating Interval control systems for Process Applications with TIMER COUNTER and commands
- Configuration of High Speed Counters with PLC and Its Programming.
- Plant Graphic Control Interfacing Program with Monitoring systems.
- Motor Starter
  - Start/Stop Push button with Motor





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overload & High temp i/p

- Motor Directions control For-Rev direction with delay & interlock Protections.
- Conveyor Systems
  - Material conveyor with Counter
- Traffic Light control
  - Traffic Light controller 4 lane
- Water Level controller
  - Water level controller with pump



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## Placement Policy

- As we are working for industries for their product development, R&D, Customization & Manufacturing we get direct recruitment related notification from that companies whenever there is the recruitment in the that companies.
- Also other companies in the market they also call us regarding recruitment process.

These entire JOB related notifications we exclusively provide to our students and they can apply in that companies directly. We upload the password protected job notifications on our website, students can access that job notifications from our website with password.